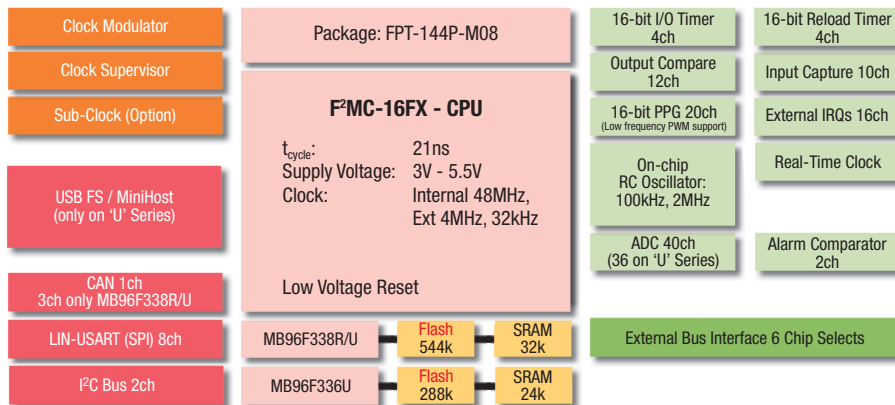


**FACTSHEET**  
**MB96330 / MB90330 / MB90335**  
**MICROCONTROLLERS**

# 16-BIT USB MCUs with MiniHost



MB96330 FX series block diagram.

**Description**

Fujitsu offers a range of 16-bit microcontrollers with on-chip USB full speed interface including MiniHost functionality.

This allows a USB device to act either as a USB-Function or as a USB MiniHost, enabling users to connect their application to a PC or to control USB devices with the microcontroller.

In particular, the use of USB memory sticks to collect data or to update the firmware of the application is becoming a popular feature for industrial applications as well as for automotive ones.

The Fujitsu 16-bit USB MCU line-up consists of two 16LX based series, the MB90330 and MB90335 series and a brand-new 16FX based MB96330 series.

The MB96330 series combines 3ch CAN with the USB functionality; it can be used for both 3.3V as well as 5.0V environments.

Fujitsu also provides the complete eco-system consisting of development boards, USB drivers by 3rd party Thesycon as well as example software including mass

storage class and open source file systems.

**USB features**

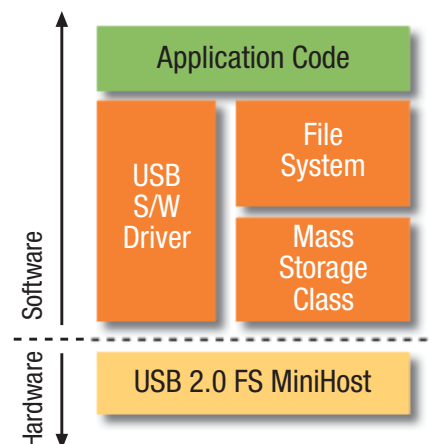
- USB-Function
  - 12Mbps Full-Speed
  - Up to 6 Endpoints supported
  - All transfer types supported: control, interrupt, bulk, isochronous
  - Dual-port RAM (FIFO mode supported)
  - Automatic transfer mode for transfer data via DMA
  - Automatic detection of connect and disconnect
- USB Driver
  - Developed by Fujitsu and Thesycon
  - Available free of charge [http://www.thesycon.de/eng/prod\\_usbfirmware.shtml](http://www.thesycon.de/eng/prod_usbfirmware.shtml)
  - Support both USB-Function and USB-MiniHost
  - Standard API norms based on Full-Speed USB specification

■ USB-MiniHost

- This is a simplified USB Host optimised for embedded applications with one USB device. All common USB Host functionalities except hub, isochronous transfer and PRE Packet are supported.
- 12Mbps Full-Speed
- Up to 5 endpoints
- Transfer types supported: control, interrupt, bulk
- Dual-port RAM (FIFO mode)
- Automatic transfer mode for transfer data via DMA
- Maximum packet length 256Bytes
- Various error (CRC error/toggle/time-out) support
- Automatic transmission and detection of handshake packets
- Automatic detection of connect and disconnect

**Example software**

- Mass storage class
- Open source file system

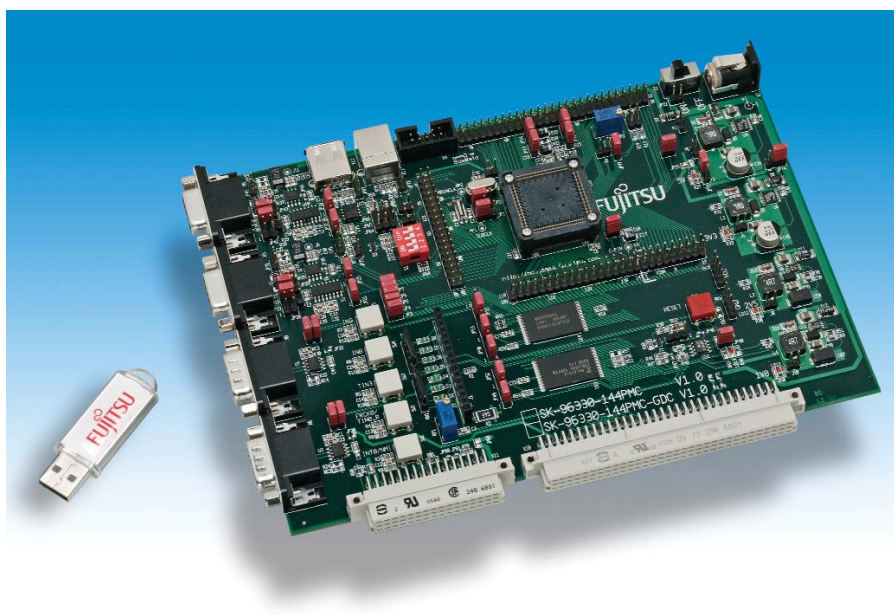


Example software configuration for USB memory stick support.

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**Development tools**

- Evaluation boards available
- Software development environment (Softune Workbench)
- EUROscope lite 16FX on-chip debugger



MB96F338U Starterkit 5K-96330-144PMC-GDC.

Device	MB96F338U	MB90F334	MB90333	MB90F337	MB90337
<b>Series</b>	MB96330	MB90330	MB90330	MB90335	MB90335
<b>CPU</b>	16FX 48MHz	16LX 24MHz	16LX 24MHz	16LX 24MHz	16LX 24MHz
<b>ROM</b>	544kBytes Flash	384kBytes Flash	256kBytes Mask ROM	64kBytes Flash	64kBytes Mask ROM
<b>RAM</b>	32kBytes	24kBytes	16kBytes	4kBytes	4kBytes
<b>USB</b>	USB full speed, USB Function and USB MiniHost				
<b>CAN</b>	3ch, 32 message buffers each	-	-	-	-
<b>ADC 10-bit</b>	36 channels	16 channels	16 channels	-	-
<b>UART</b>	8 channels USART, SPI, LIN	4 channels	4 channels	2 channels	2 channels
<b>SIO</b>	8 channels USART, SPI, LIN	1 channel	1 channel	1 channel	1 channel
<b>I<sup>2</sup>C</b>	2 channels	3 channels	3 channels	1 channel	1 channel
<b>PWM</b>	20 x 16-bit	3 x 16-bit/6 x 8-bit	3 x 16-bit/6 x 8-bit	2 x 16-bit/4 x 8-bit	2 x 16-bit/4 x 8-bit
<b>Timer</b>	4 x I/O Timer 16-bit, 4 x Reload Timer 16-bit, Time Base Timer	I/O Timer 16-bit, 3 x Reload Timer 16-bit, 16-bit PWC		Reload Timer 16-bit, PWC 16-bit	
<b>Ext. Interrupt</b>	16 channels	8 channels	8 channels	8 channels	8 channels
<b>Ext. bus interface</b>	MUX/Non MUX	MUX/Non MUX	MUX/Non MUX	-	-
<b>Supply voltage</b>	3.0 to 5.5V	3.0 to 3.6V	3.0 to 3.6V	3.0 to 3.6V	3.0 to 3.6V
<b>Package</b>	FPT-144P	FPT-120P	FPT-120P	FPT-64P	FPT-64P

**ASK FUJITSU MICROELECTRONICS EUROPE**

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<http://emea.fujitsu.com/microelectronics>